Dr Stallon — Dr. Neutra — Correspondence — for your file

State of California — Department of Health Services

Memorandum

To : Richard P. Wilcoxon
Acting Deputy Director
Toxic Substances Control Division

Via : John M. Heslep, Ph.D., Chief
Laboratory and Epidemiology Branch

Via : Raymond R. Neutra, M.D., Dr.P.H., Chief
Epidemiological Studies Section
by G

From : Norman Gravitz, Ph.D.
Epidemiological Studies Section

Date : May 16, 1983

Subject: Letter to Congressman Esteban Torres

D. L. Storm, Ph.D., Acting Chief DS
Alternative Technology and
Policy Development Section

Howard Hatayama, M.S., P.E.
Alternative Technology and
Policy Development Section

Congressman Esteban Torres sent a copy of our report,"Ambient Air Monitoring and Health Risk Assessment for Suspect Human Carcinogens Around the BKK Landfill in West Covina", to the Congressional Research Service of the Library of Congress and asked us to comment on their critique.

We have drafted a letter for your signature to Congressman Torres, responding to the questions and comments raised in the Congressional Research Service Review.

Attachments (2)

NG/p

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814

Honorable Esteban Torres
House of Representatives
Washington, D.C. 20515

ATTN: James Casso

re: Comments on Congressional Research Service Review of the Report: "Ambient Air Monitoring and Health Risk Assessment for Suspect Human Carcinogens Around the BKK Landfill in West Covina"

We appreciate and commend the efforts of your office in obtaining a review of this report by such a highly regarded and independent group as the Congressional Research Service of the Library of Congress. We were also pleased that the Congressional Research Service was largely supportive of our report. The following are our responses to the questions and comments raised in the review.

1) Several sources of data were used for comparison of background levels of the monitored compounds. A recently published paper by Singh et al (Environmental Science Technology, December, 1982) describes results from sampling ambient air for 20 bacterial mutagens and suspect carcinogens in several U.S. cities, including Riverside, California. Of the 20 compounds sampled five were substances also monitored around the BKK landfill site (chloroform, ethylene dichloride, tetrachloroethylene, trichloroethylene, and benzene).

The California Air Resources Board also has published some background ambient air data in "Proposed Amendments to Chapter 1, Part III of Title 17, California Administrative Code, Regarding Emissions of Toxic Air Contaminants." (September 10, 1982). (see Table).

This table compares the data presented in our study to that of Singh et al and the California ARB. The sources of these emissions in the Singh et al and the ARB studies are not discussed in sufficient detail to attribute these background concentrations to any particular point source.

2) Except for the periodic exceedence of the State Ambient Air Ouality Standard for vinyl chloride, the BKK landfill is operating in conformance with all applicable regulations for hazardous waste landfills.

3. The purpose of the report was to document emissions of suspect carcinogens attributable to the BKK landfill. It was not within the

scope of this study to monitor exposure to volatile carcinogens occuring from accidental spills along the route to BKK (acute exposure conditions). Although such incidents are of vital concern to the Department and should have been reported to us, the responsibility for management of such incidents lies with the California Highway Patrol and local health and safety officials. The Department's role through the State Office of Emergency Services to to provide advice to the on-scene personnel. The Department is not itself equipped to monitor exposure during these incidents, but can advise and coordinate the activity of local health officials. If significant spills do occur on a regular basis, clearly an unacceptable public health threat exists, and immediate corrective action should be taken.

4) Although ambient air pollutants penetrate buildings, they are usually lower inside than outside, and are not concentrated inside (see - J.E. Yocom. J. Air Pollution Control Assoc. 32: 500-520, 1982). Indoor air monitoring was not included in the scope of work because the primary purpose of the study was to quantify the ambient concentrations of the volatile carcinogens which may be attributable to emissions from the BKK landfill. Sources indoors such as auto exhaust from an attached garage, and the household use of hydrocarbon and chlorinated solvents, make it difficult to distinguish the excess exposure due to proximity to the landfill from other sources of pollutants.

5) While it is entirely possible that the meteorological conditions and the heat from the flares could result in lower concentrations during the study period than during the cooler winter months, it was necessary to initiate the program as expeditiously as possible in response to citizen concerns. It was not possible to continue the monitoring program as described into the winter months because of the intense resource requirements and the demand for a relatively short reporting period. The Department is in the process of developing continuing air monitoring requirements for BKK as well as the other hazardous waste facilities in California as part of our final facility permit requirements.

6) The dosage and thus risk are functions of the residency period. The 7-year residency period, used in the report, was based on information from the City of West Covina indicating that the first permits for occupancy for the homes immediately adjacent to the landfill were issued approximately 7-years ago. Since the average residency period in California may be on the order of 3-4 years the use of the 7 year residency period provides the maximum individual excess risk from exposure to date.

7) The residents near the BKK landfill are all supplied with water from the Metropolitan Water District and there are no wells in the area

providing drinking water to the residents. There has been no evidence of drinking water contamination by the landfill. No attempt was made to quantitate the excess cancer risk from any contaminants in the water supply serving the residents around the BKK landfill.

8) The Department is indeed concerned about potential synergistic action between carcinogens. However there is presently no acceptable theory or method for estimating synergism among carcinogens. Thus the most justifiable assumption that the Department could make at this time using accepted risk methods and the one that was taken is that the risks from exposure to more than one carcinogen are additive.

9) It was not the intent of this study to look at alternatives to disposal of hazardous waste at BKK. However, the Department has already promulgated regulations for and has taken the first steps toward the redirection of certain types of hazardous wastes from land disposal. The compounds monitored in this study, with the exception of vinyl cloride which has already been banned from land disposal, are scheduled to be banned from landfills in January 1, 1985.

   Indeed, additional monitoring may address these issues and is necessary in order to determine if excess exposure is being reduced by the current mitigation efforts. However, it is the Department's opinion that the excess risk associated with the levels of suspect carcinogens found in this study is not of such magnitude that emergency action is required to protect the health of residents living near the landfill. The Department will ensure that BKK implements all the necessary mitigation measures to minimize emissions.

Thank you again for your efforts and we hope that this response will help to clarify matters for you.

Sincerely,

Richard P. Wilcoxon
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Comparison of Ambient Air Monitoring Data in the L.A. Basin Area

Substance	Mean (Max), ppb		Highest Mean (Max), ppb	Ratio of the Mean Concentrations	
	Riverside[a]	Los Angeles	Vicinity of BKK	BKK / Riverside	BKK / L.A.
Benzene	3.95 ± 1.91 (10.98)	6.8[b] (28)	4.8 (8.6)	1.2	0.7
Chlorobenzene	----	0.2[c] (0.5)	<10 (<10)	---	---
Chloroform	0.703 ± 0.798 (4.747)	1.0[b] (4.3)	1.0 (9.9)	1.4	1.0
Ethylene dichloride	0.357 ± 0.325 (2.505)	0.52[c] (1.4)	3.0 (8.7)	8.4	5.8
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a) Singh, et al, 1982. Environmental Science Technology No.1, 16: 12.

b) Data collected by California Air Resource Board

c) Singh, et al, 1981. Atmosphere Env., 15.

d) California Department of Health Services, Air Resources Board, and South Coast Air Quality Management District, March 1983

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

M E M O R A N D U M

DATE: April 22, 1983

TO: Edward Camarena, Director Enforcement Division

FROM: William D. Holland, Director of Technical Services

SUBJECT: Torres Memorandum (Response to #5 page 3)

Although the ambient monitoring was conducted only during the three months which was the warmest part of the year, it was done for these reasons:

1. The expediency of the occasion. Results were necessary as soon as possible to provide the data for risk assessments to the general populace in the area.

2. The predominant sea-breeze during daylight hours in this time period. The area to the north and northeast of the landfill is most greatly affected during the sea-breeze time and it was the intent of the study to determine the concentrations during those periods. The warmer air, etc. resulted in greater dispersion during the sea-breeze time and lower concentrations in these areas.

3. Previous sampling for vinyl chloride. Vinyl chloride monitoring during the year prior to the study indicated that more exceedances and equally high maximum vinyl chloride concentrations were experienced during the summer months as compared to the winter months in the residential areas affected by the drainage winds.

It is true that a year-long study probably would have resulted in a little better data for risk assessments. However, this was not possible as time and money for the study were limited.

We agree that sampling during the winter months might result in different concentration levels in the residential area to the south and southwest of the landfill from those measured during the study period. Two types of wind flows would cause an impact on those residences. One would be due to local drainage winds when weather conditions were stable and would

be similar to that experienced during the study period. The other type of flow would be from the same directions but at much higher speeds due to unstable weather conditions. Whether this would result in higher concentrations in the residential area is questionable when examining the past vinyl chloride data. As it turned out during the study, 37% of the time the wind flow was from the landfill to those residences with very low wind speeds resulting in the highest concentrations of contaminants reported.

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ESTEBAN E. TORRES
34TH DISTRICT, CALIFORNIA

COMMITTEES:
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Congress of the United States
House of Representatives
Washington, D.C. 20515

March 24, 1983

Dr. Robert Stephens
Deputy Director
California Department of
Health Services
1219 K Street
Sacramento, CA 94814

Dear Dr. Stephens:

I recently received from the Department of Health Services a copy of the "Ambient Air Monitoring and Health Risk Assessment for Suspect Human Carcinogens Around the BKK Landfill in West Covina." After I reviewed the document, I requested the Congressional Research Service to conduct an analysis of the report. I am enclosing for your review and comments a copy of the Congressional Research Service's analysis.

I appreciate your kind attention to this matter, and I am looking forward to your response.

Sincerely,

Esteban E. Torres

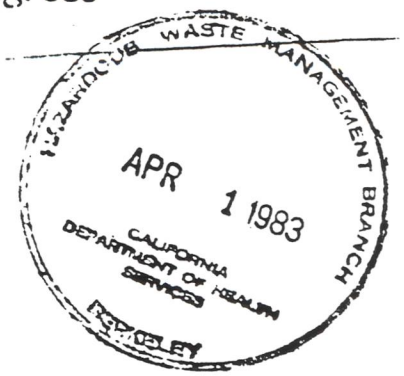
ESTEBAN E. TORRES
Member of Congress

EET:jmc

Enclosures:

Congressional Research Service
The Library of Congress

Washington DC 20540



TO : Honorable Esteban Torres
Attention: Jamie Casso

SUBJECT : Analysis of the California DHS, ARB, and SCAQMD Study of Air Around BKK Landfill

The following information is being provided in response to your request of 15 March 1983.

The "Ambient Air Monitoring and Health Risk Assessment for Suspect Human Carcinogens Around the BKK Landfill in West Covina" by the California Department of Health Services (DHS), the California Air Resources Board (ARB), and the South Coast Air Quality Management District (SCAQMD), dated March 1983, is a reasonably thorough study of the ambient air quality around the BKK landfill; the study conforms to current, conventional standards for research of this type. With additional funding, monitoring, and analysis, more information could be obtained which could more completely address the health concerns of the residents around the landfill; this additional information will be discussed later in this memorandum.

The placement of the air pollution monitors by the DHS-ARB-SCAQMD task force in their study was completely reasonable; the areas of odor complaints were correlated with the areas of predominant wind coverage and air drainage, and these are the most reasonable places to find the greatest levels of air emissions from the landfill on a continuous basis. The selection of the pollutants to be monitored was also reasonable, correlating carcinogenic potential of the substances with records of chemicals disposed at the site. The methodologies

for pollutant acquisition and testing were reasonable and appropriate; with greater funding, quicker chemical analyses could have been possible (using more advanced equipment and more personnel), but such analyses probably would not have led to conclusions significantly different from those reached in the study. The calculations of the possible excess toxicity and cancer risks resultant from the levels of the pollutants measured in the area were performed using assumptions which would tend to yield the greatest possible excess risk for ambient exposure to date. As such, the individual risk assessment can be said to represent the maximum individual risk from ambient chronic exposure to date, and the conclusions of the study can be said to be the most protective of the public health with ambient chronic exposure to date. The extrapolation to population risk assessment was also done with assumptions which would yield the maximum potential risk to date to the population in the area, and the conclusions reached could therefore also be said to be the most protective of the public health in the area given chronic ambient exposure to date.

While the DHS-ARB-SCAQMD study is a reasonable one as far as it goes, several questions remain which are raised by, or are unaddressed in, the study:

1) Relative to the elevated levels monitored around the landfill, the report states "there is some data available which suggests that Perc, TCE and benzene occur at comparable levels in some areas of the L.A. air basin." (p. 3) The report does not state where these areas are, or what the sources of these elevated levels might be (e.g., manufacturing, drycleaning, dumpsites).

2) The report does not state if the BKK landfill is operating in conformance with present operating regulations for hazardous waste landfills.

3) The report monitored only chronic, long-term exposure conditions and did not mention or monitor acute exposure conditions which occur on a regular basis; it has been reported that trucks carrying liquid wastes through the surrounding

community regularly spill some of their loads (especially upon braking and turning) thus adding regular, acute sources of exposure, possibly in areas which were not monitored in the study. People walking in the areas of these spills, and children possibly playing in the areas of these spills, could be exposed regularly to acute levels of hazardous and other wastes. The monitoring program conducted in the study possibly neglected this type of exposure, and the individual and population risk assessments would therefore also possibly neglect this type of exposure and thus understate the total possible risk.

4) The study only monitored ambient air. While there may be several jurisdictional reasons for this, the question remains: what are the levels of the carcinogens in air which is inside buildings, the air which people breathe about 75 to 90 percent of the time? Because of socioeconomic, philosophic (in relation to energy use or the ecology), or other reasons, residents in the area may not keep their houses air-tight, may not operate air conditioners all the time, and may instead leave their windows and screen-doors open, thus allowing ambient pollutants relatively free access to indoor spaces. Some pollutants can accumulate indoors, and residents may be exposed to these pollutants at levels exceeding those outdoors; it is possible that the levels of the carcinogens measured in ambient air may be less than those existing in the houses in the area. No monitoring was performed indoors to confirm or reject this possibility.

5) Ambient monitoring was performed only during three months, which was the warmest part of the year and the time of year with the most daylight. Warmer air provides a greater buoyant force than cooler air. Coupled with the heat from the on-site flares (used to decrease on-site concentrations of gases generated from the wastes), the warmer air would drive the volatile emissions higher, would not allow them to cool (and settle back to earth) as quickly, would allow them to be dispersed in a greater volume and would therefore result in reduced

concentrations on the ground relative to the situation with cooler air. While cooler air could also mean that fewer molecules might be volatilized, ambient monitoring was not performed in cooler months to confirm or reject the possibility that during cooler months there could be greater concentrations of the carcinogens at ground-level because of the reduced dispersion volume.

6) The study calculated excess risk based upon seven (7) years of exposure. The study did not state what the average duration of residency in the area is likely to be, and so did not calculate the level of excess risk obtainable over the average duration of residency (which may or may not be seven years). Assuming no changes in exposure rates, the level of excess risk would increase for durations of residency exceeding seven years.

7) The study only monitored emissions of carcinogens into the air. There was no discussion or monitoring of dispersion through water, nor was there analysis of potential excess cancer risk resulting from possible water-borne exposure to carcinogens from the landfill.

8) The study calculated excess cancer risk using current techniques which have been criticized as neglecting the amount of risk resultant from synergisms (where the total effect caused by several factors is greater than the simple addition of the individual effects of each factor, i.e., the synergistic total is greater than the sum of the parts) which may be occurring with the simultaneous exposure to the several chemicals emitted from the landfill.

9) the study did not address options or alternatives to storage of hazardous wastes in the landfill, nor the possible reductions in excess risk potentially achievable by use of alternatives to dumping. Such alternatives have been explored in the California Office of Appropriate Technology report "Alternatives for the Disposal of Wastes."

Additional monitoring and analysis may be able to address these issues. Even with additional monitoring and analysis, the perceived risks may remain and may continue to be of concern.